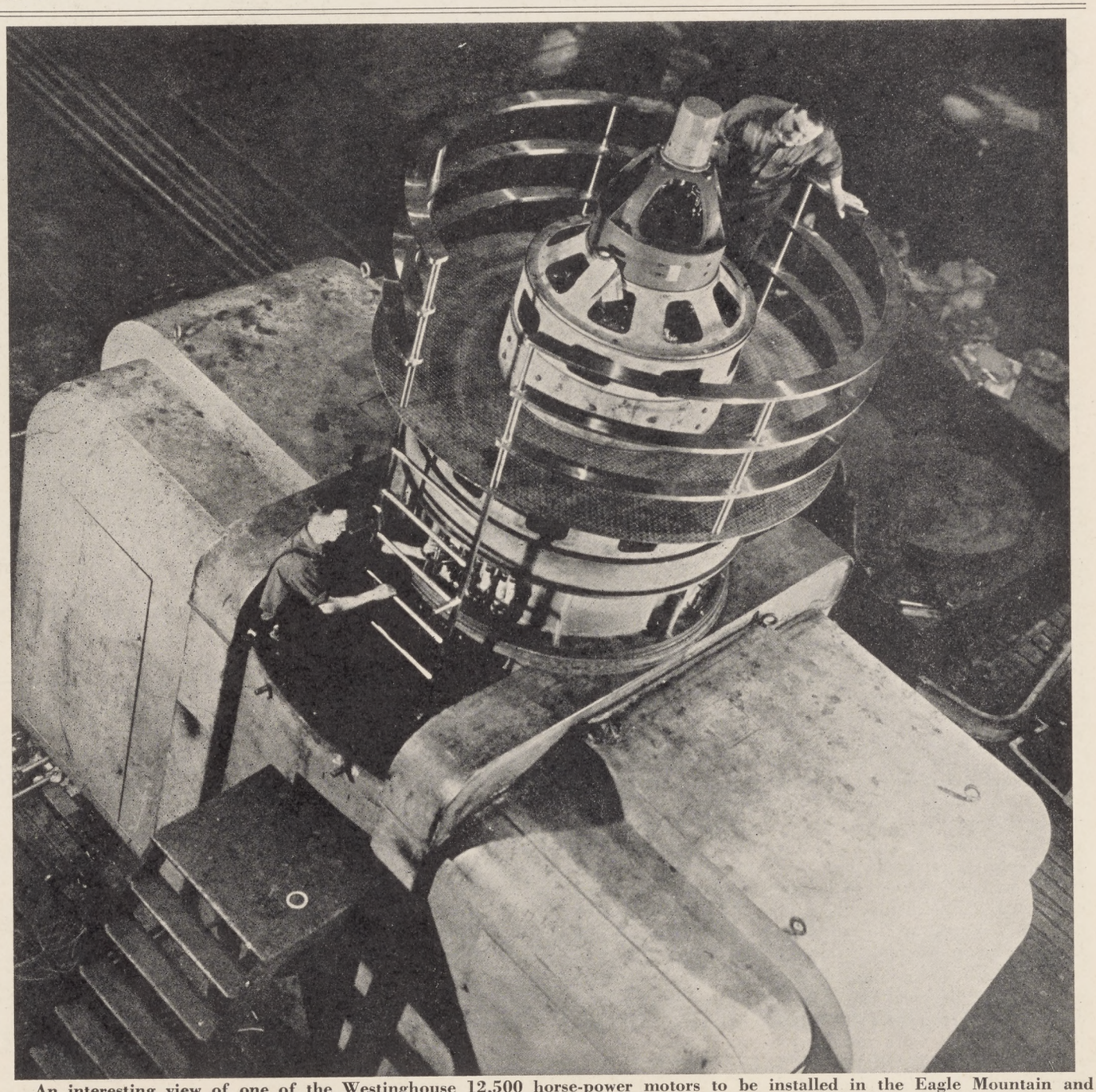
• COLORADO RIVER •

AQUEDUCT NEWS

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Vol. V AUGUST 25, 1938 No. 16



An interesting view of one of the Westinghouse 12,500 horse-power motors to be installed in the Eagle Mountain and Hayfield pumping plants on the Colorado River Aqueduct. A total of six such motors will be installed in the first development of these two plants.

• COLORADO RIVER •
AQUEDUCT NEWS
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

306 West Third St.
Los Angeles, California

Published twice monthly in the interest of Field and Office Workers on the Colorado River Aqueduct, and for the information of all other citizens of the Metropolitan Water District.

Vol. V. August 25, 1938 No. 16.

Gene Wash and Copper Basin Dams Accepted August 15

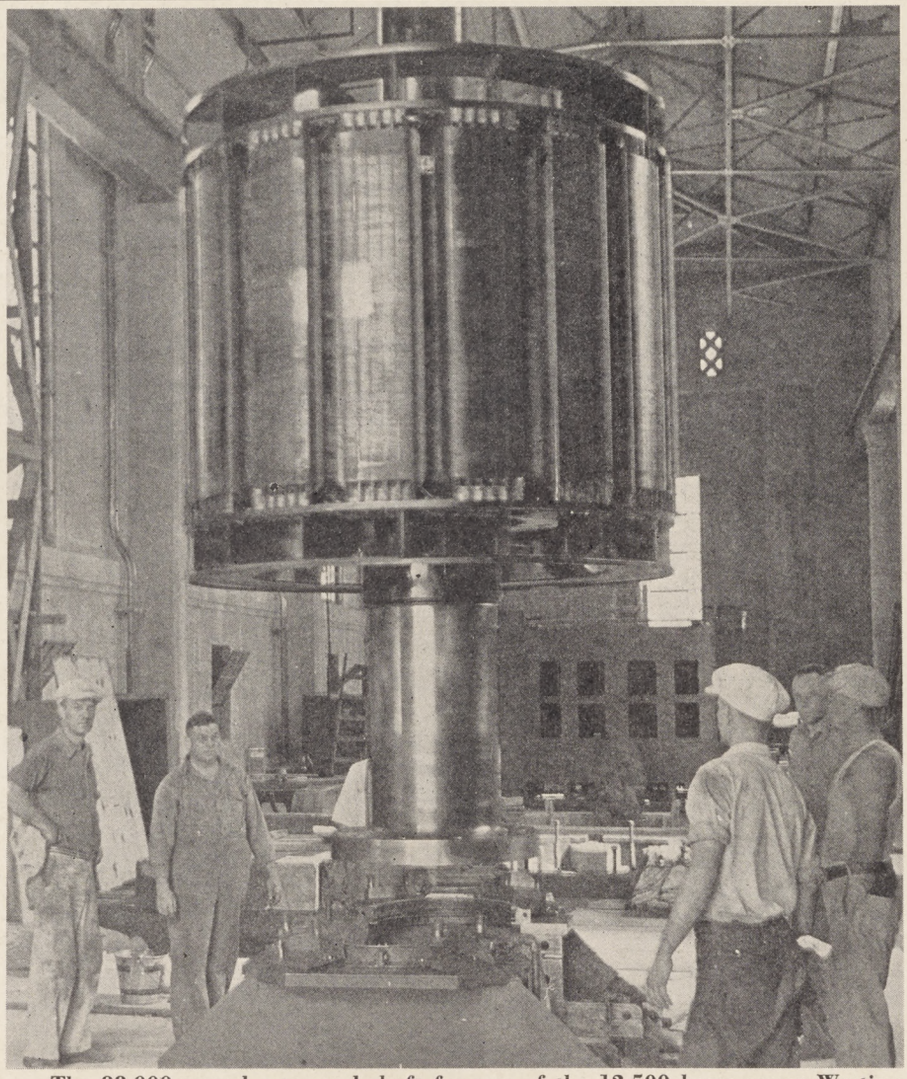
Gene Wash and Copper Basin dams, which create reservoirs of the same names, were accepted by the District on August 15, thereby completing all contract work on the main aqueduct with the exception of a small amount of clean-up remaining to be finished at Parker Dam.

Containing approximately 32,000 cubic yards of concrete, these two dams were built on the same contract by the J. F. Shea Co. Contract price for the work, which included dikes, clearing reservoir sites, and outlet works at the east portal of the Whipple Mountain tunnel, was $594,207.

Located in Division 1 in the immediate vicinity of the Colorado River, the Gene Wash reservoir has a capacity of 6600 acre feet of water which will be pumped into it directly from the Intake pumping plant. The Copper Basin reservoir, which will be filled by water pumped from the Gene pumping plant, has a capacity of 20,700 acre feet of water.

Latest progress reports from Parker Dam indicate that only a small amount of clean-up work remains to be done by the J. F. Shea Co., who built the dam as a sub-contractor for The Six Companies. It is expected that the contractor will be off the job by the end of August, at which time the dam will be turned over for operation to the U. S. Bureau of Reclamation.

All other construction work now under way on the main aqueduct is being done by District crews as force account jobs. The major work remaining to be completed is the installation of equipment in the pumping plants, and the construction of the San Jacinto tunnel.



The 88,000 pound rotor and shaft for one of the 12,500 horse-power Westinghouse electric motors at the Eagle Mt. pumping plant. The entire motor weighs approximately 126 tons.

– DIRECTORY –

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General Manager and Chief Engineer.....F. E. Weymouth
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Asst. Controller.....J. M. Luney
Chief Elec. Engineer.....J. M. Gaylord
Asst. to Gen. Mgr., Don J. Kinsey
Secy. to Gen. Mgr.....Elisabeth von Hagen

DIVISION ENGINEERS

Distributon.....R. B. Diemer
Transmission....Robert N. Allen
Maintenance.....W. J. Neale

SUPERINTENDENTS OF CONSTRUCTION PUMPING PLANTS

Intake and Gene.....T. T. Walsh
Iron Mt. .....B. H. Martin
Eagle Mt. and Hayfield.....R. C. Booth

SUPERINTENDENTS

(Main Aqueduct Tunnels)

San Jacinto Tunnel, District Force Acct., B. C. Leadbetter, Gen. Supt.; S. J. Shrode and C. E. Sides, Tunnel Supts.; Chas. F. Thomas, Jr., Edwin Noon, Supts.; F. A. Backman, Gen. Foreman.

(Distribution Tunnels)

Monrovia Tunnels Nos. 1, 2 and 3, West Construction Co., H. E. Carleton, Gen. Supt.; E. M. Penn, Concrete Supt.

(Distribution Pipe Line)

Schedules 9P, 10P, 11P, United Concrete Pipe Corp., John Huber, Plant Supt.; Roy Richards, Construction Supt.

Schedules 8C, 9C, 12C, Basich Bros., Nick Basich, Gen. Supt.

Schedules 21SC, 22SC, 23SC, J. F. Shea Co., Gilbert J. Shea, Gen. Mgr.; C. A. Shea, Jr., H. F. Rennebohm, Supts.

Distribution Headworks, The Contracting Engineers Co.; Julian Huddelston, Supt.

(Dams)

Parker Dam, J. F. Shea Co., Frank Crowe, Gen. Supt.; H. P. Bunger, Constr. Eng., U.S.B.R.

NO INCREASE IN DISTRICT TAX RATE FOR FISCAL YEAR 1938-1939

Board Holds Rate at 40 Cents Despite Additional Investment

There is to be no increase this fiscal year in the tax rate of The Metropolitan Water District of Southern California.

Acting on the recommendation of its financial committee, the District Board of Directors on August 20 voted to limit the tax levy for the year 1938-39 to a 40-cent rate, the same rate in effect during the past fiscal year. Members of the finance committee making the recommendation for no increase in the District's tax levy are John R. Richards, Chairman, Victor H. Rossetti, and D. W. Pontius.

Members of the finance committee pointed out that aqueduct construction costs, as a whole, have been considerably less than the original estimates. Additional savings also have been effected by the District officials, it was explained, through a recent bond refunding agreement with the Reconstruction Finance Corporation. These large savings, it was indicated, have made it possible to keep the 1938-39 tax rate down to the level of last year's despite the fact that approximately $32,000,000 of additional bond funds were invested in aqueduct construction work during the past year.

General Manager F. E. Weymouth stated that by the end of the present fiscal year the aqueduct system will be 92 per cent completed. At the present time the 392-mile water supply system, extending all the way from the Colorado River to the thirteen cities comprising the District, is 85 per cent completed, he pointed out.

Of the 40-cent District tax rate, 35 cents will be used to meet interest payments on outstanding aqueduct bonds and other capital charges; a five-cent levy is to be used for general operating purposes.

Being constructed from the proceeds of a $220,000,000 bond issue, the aqueduct will deliver a billion gallons of water a day to the thirteen District cities. It is expected to be placed in operation the latter part of 1939.

Up to the end of the past fiscal year, District bond funds to the amount of $148,000,000 had been invested in the water project, which has given employment during the past five years to more than 35,000 residents of the District cities and has provided pay roll benefits of $54,000,000 on aqueduct construction. In addition, business and manufacturing organizations in Southern California and throughout the nation have received tremendous benefits through the manufacture and sale of the vast quantities of materials being used on the aqueduct job, District records reveal.

Cities in the Metropolitan Water District are not required to meet their share of the District's obligations from taxes, it was pointed out by Controller D. W. Pontius. Each city may, if it chooses, make such payments from municipal utility revenues. Glendale, for example, it was stated, has never levied any taxes for its share of District obligations, but has met all such charges from surplus earnings of its municipal water and power department.

The District's Board of Directors recently awarded a contract to the California Portland Cement Co. for furnishing 5,800 barrels of sulphate-resistant portland cement to be used on the distributing system. The price was $1.70 per barrel, f.o.b. Colton.

Less Than 4000 Feet Remain To Be Driven In San Jacinto

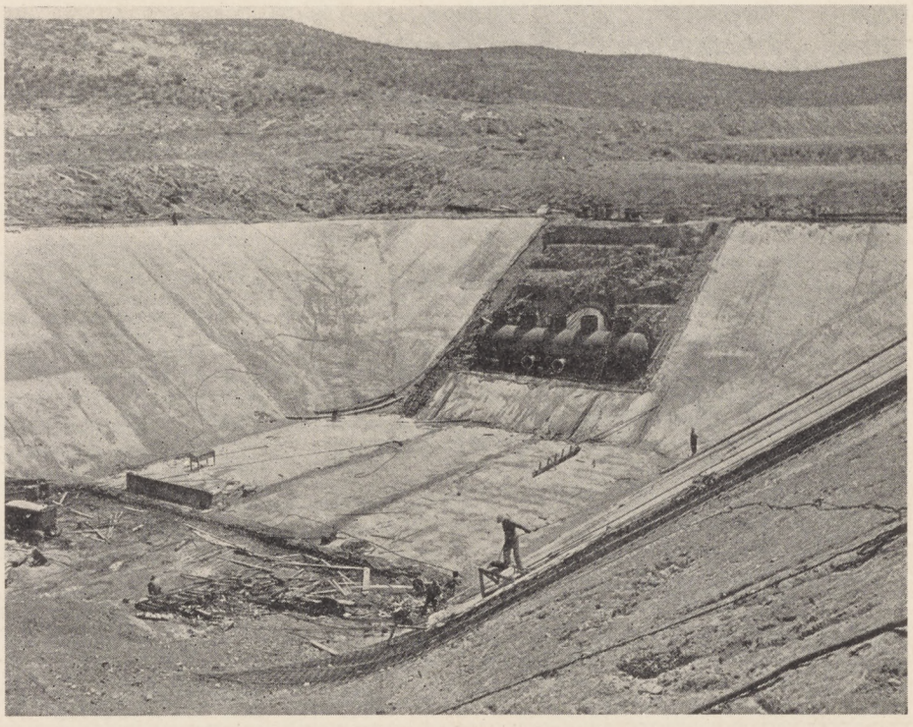
Although the number of headings was reduced by one-half in the San Jacinto tunnel when the Cabazon-Lawrence tangent was holed through, the job continues to report a high rate of excavation progress.

The 4,000-foot mark was cracked on August 22, when the distance remaining between Lawrence and Potrero was reduced to 3,961 feet.

Striking dry ground in both faces in the latter part of this month, the Lawrence and Potrero headings were being shoved ahead at a rate of better than 36 feet per day. On the basis of progress made up to the 22nd of the month, it is probable that the total advance for the month will be in excess of 1,000 feet.

As of August 22, the total footage excavated during the month was 806 feet. During this period the Lawrence face was advanced 385 feet and the Potrero heading was driven 421 feet.

With tunnel traffic now able to run all the way from East Portal to the foot of the Lawrence adit, preparations are under way to complete the concrete lining of this section of the tunnel. Concrete operations will be carried on from the East Portal batching plant.



The forebay of the distributing system headworks being constructed on the north side of the Cajalco reservoir. The large tank in the center, which covers the portal of the Cajalco outlet tunnel, is the manifold for the regulating valves which control the flow of water out of the reservoir.

CONSTRUCTION PROGRESS

August 1 to 15, 1938

TUNNEL (MILES)	EXCAVATION Completed	EXCAVATION Remaining	LINING Completed	LINING Remaining
Aqueduct	91.29	0.82	86.03	6.08
Distribution	16.27	0.40	16.21	0.42
Total	107.56	1.22	102.24	6.50

CANAL, CONDUIT AND SIPHON (MILES)	Completed	Remaining
Excavation	145.60	0.01
Concrete	144.42	0.14
Backfill	80.70	0.14

DISTRIBUTION PIPE LINE (MILES)	Completed	Remaining
Excavation	55.43	7.79
Concrete	55.35	7.87
Backfill	54.01	9.21

TUNNELS

AQUEDUCT

CONTRACTOR	TUNNEL	LENGTH IN FEET	EXCAVATION IN FEET: NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAINING	LINING IN FEET: ARCH OR INVERT	NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAINING
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	SAN JACINTO										*(32)	(36,705)	(32,138)
	Cabazon Shaft to East Portal	8,880		Completed		8,880	0	Arch	0	0	0	8,484	396
								Invert	0	0	0	8,484	396
	Cabazon to Lawrence	26,809		Completed		24,158	0	Arch	0	0	0	6,973	19,836
	Lawrence to Cabazon			Completed		2,651		Invert	0	0	0	6,972	19,837
	Lawrence to Potrero		45	5.1	230	1,992							
	Potrero to Lawrence	17,672	45	4.8	217	11,360	4,320						
								Arch	0	0	0	5,681	11,991
								Invert	0	0	0	6,112	11,560
	Potrero Shaft to West Portal	15,482		Completed		15,482	0	Arch	1	40.0	40	15,482	0
								Invert	0	0	0	15,482	0
	TOTALS Ft.	68,843	90	5.0	447	64,523	4,320	Arch	2	40.5	40	36,620	32,223
	Miles	(13.04)			(0.08)	(12.22)	(0.82)	Invert	0	0	0	37,050	31,793

DISTRIBUTION

*Invert considered to equal 0.2 and arch 0.8 of completed section.

WEST CONSTRUCTION CO.	MONROVIA NO. 3	32,105		Completed		32,105	0				0	32,095	0
													0
J. F. SHEA CO., INC.	ROCKDALE (Schedule 21SC)	262			0	262	0				0	262	0
	OAKHILL (Schedule 21SC)	597	18	5.9	107	107	490				0	0	597
	ASCOT (Schedule 21SC)	1,622			0	0	1,622				0	0	1,622
	TOTALS Ft.	34,586	18	5.9	107	32,474	2,112				0	32,357	2,219
	Miles.	(6.55)			(0.02)	(6.15)	(0.40)				0	(6.13)	(0.42)

Canal, Conduit, Siphon and Pipe Lines

AQUEDUCT

SCHED. NO.	CONTRACTOR	FEATURES	Length In Feet	EXCAVATION—Feet: Period	To Date	Remain'g	CONCRETE—Feet: Period	To Date	Remain'g	BACKFILL—Feet: Period	To Date	Remain'g
20 A & B	M. W. D.—FORCE ACCT.	Siphon	752	0	705	47	0	0	752	0	0	752

DISTRIBUTION PIPE LINES

9-P	UNITED CONC. PIPE CORP.	Precast Concrete Pipe	8,697	0	8,697	0	215	8,697	0	309	8,172	525
8C-9C-12C	BASICH BROTHERS	Cast-in-Place Conc. Pipe	1,656	0	1,398	258	107	1,148	508	40	940	716
21SC	J. F. SHEA CO., Inc	Welded Steel Pipe	26,449	2,152	14,599	11,850	2,282	14,565	11,884	3,035	10,165	16,284
22SC			28,310	0	0	28,310	0	0	28,310	0	0	28,310
23SC			34,470	2,800	33,772	698	2,926	33,592	878	3,437	31,685	2,785
	TOTALS		99,582	4,952	58,466	41,116	5,530	58,002	41,580	6,821	50,962	48,620

Miscellaneous Construction

PARKER RESERVOIR—SIX COMPANIES, INC.

FEATURES	Est. Quan.	Period	To Date	Per Cent.
Diversion Tunnels—Excav.	3,463 Ft.	0	3,463	100
Diversion Tunnels—Concrete	3,363 Ft.	0	3,363	100
Cofferdams—Excav.	227,582 C.Y.	0	227,582	100
Cofferdams—Fill	464,890 C.Y.	0	464,890	100
Outlet Works—Excav.	220,000 C.Y.	0	207,787	100
Outlet Works—Concrete	5,000 C.Y.	0	5,600	100
Dam—Excavation	1,502,200 C.Y.	0	1,526,726	100
Dam—Concrete	297,900 C.Y.	0	290,667	100
Power House—Excav.	58,000 C.Y.	0	67,894	100
Power House—Concrete	14,000 C.Y.	0	15,431	100

GENE WASH RESERVOIR—J. F. SHEA CO., INC.

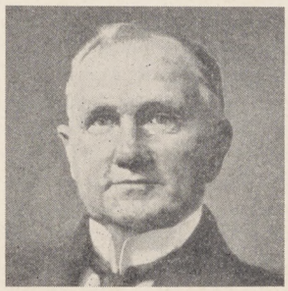
FEATURES	Est. Quan.	Period	To Date	Per Cent.
Dam—Excavation	9214 C.Y.	0	9,214	100
Dam—Concrete	14,417 C.Y.	0	14,417	100
Spillway—Excavation	4,763 C.Y.	0	4,763	100
Spillway—Concrete	4,729 C.Y.	0	4,729	100
Dike—Excavation	2,361 C.Y.	0	2,361	100
Dike—Fill	8,710 C.Y.	0	8,710	100
Dike—Concrete	926 C.Y.	0	926	100

AQUEDUCT PUMPING PLANTS AND APPURTENANT WORKS

PLANT	CONTRACTOR	PER CENT COMPLETED: Excavation	Concrete	Steel Erect'n
INTAKE	WINSTON BROS. CO. & WILLIAM C. CROWELL	100	100	100
GENE		100	100	100
IRON MT.	WOOD & BEVANDA	100	100	100
EAGLE MT.	L. E. DIXON CO.	100	100	100
HAYFIELD	L. E. DIXON & CASE CONST. CO.	100	100	100

COPPER BASIN RESERVOIR—J. F. SHEA CO., INC.

FEATURES	Est. Quan.	Period	To Date	Per Cent
Dam—Excavation	11,850 C.Y.	0	11,850	100
Dam—Concrete	17,495 C.Y.	0	17,495	100
Spillway—Excavation	8,137 C.Y.	0	8,137	100
Spillway—Concrete	2,057 C.Y.	0	2,057	100
Outlet Works—	Lump Sum	0	100%	100
Clearing Reservoir Site	427 Ac.	0	427	100



DR. ELWOOD MEAD
(1858-1936)

Elwood Mead, the man whose name was given to the world's largest artificial lake—that formed by Boulder Dam—was born at Patriot, Indiana, January 16, 1858.

From a humble beginning, he made his way to the top of his chosen profession. As a boy he experimented with a home-made transit on his father's farm in Switzerland County, Indiana, and worked his way through school as a rodman on a survey party. At the time of his death, in 1936, he was, and had been since 1924, the Commissioner of the United States Bureau of Reclamation.

As a teacher and administrator in the field of irrigation, Dr. Mead was renowned throughout the world. In his specialty, irrigation law, he was a pioneer and the influence of his research, innovations and ideas is reflected in laws governing irrigation practice in the arid states of western United States and in many other parts of the world.

It is said that perhaps no man knew the terrain of western United States better than Dr. Mead. He and "Buffalo Bill" Cody explored the upper Colorado and Green rivers and some of the more difficult rivers in Wyoming in 1888. Repeated trips in the years following gave him first-hand knowledge of virtually every creek and range of hills in the arid region.

He received his Bachelor of Science degree from Purdue in 1882 and a degree in Civil Engineering from Iowa State College in 1883. After teaching for a number of years he went to Wyoming as territorial engineer and served that state as its first State Engineer from 1888 to 1898. It was during this period that he first gained prominence.

(*Continued on Page* 8.)

MONTHLY REPORT REVIEWS ACTIVITIES ALONG THE AQUEDUCT LINE

(EDITOR'S NOTE: The following is a brief summary of some of the activities of the District as set forth in the monthly report of General Manager F. E. Weymouth, filed with the Board of Directors in August, covering work done in July.)

Legal Division

On July 21 there were delivered to the Reconstruction Finance Corporation $48,500,000 temporary refunding bonds, of the denomination of $1,000 each, carrying 4¼ per cent interest coupons, in exchange for a like aggregate amount of temporary refunding bonds of the denomination of $100,000 each.

Miscellaneous Activities Division

One hundred and thirty employment applicants were cleared through the District's labor employment office as eligible for work on the aqueduct. Of this number 40 were made available for force account work and 90 were made available for aqueduct contractors. Identification certificates were issued to 54 applicants, making a total of 25,931 such certificates issued to July 31, inclusive.

Field Engineering and Construction

Operation of Utilities—During the period June 16 to July 15, power used amounted to 5,913,600 kw.hr., 9,160 long distance telephone calls were handled, and 2,112,100 cubic feet of water was delivered.

Salvage Operations—Clean-up crews have completely cleared the camp sites at all the Coachella tunnel camps.

Aqueduct Construction—Concrete placing for the tunnel plug in diversion tunnel No. 2 at the Parker Dam site was started on July 11 and was completed on the 16th. Cooling of this plug, which was started on the 11th, is still in progress. All work on the Parker Dam contract at the end of the month was approximately 95 per cent completed.

The Cabazon-Lawrence tangent of the San Jacinto tunnel was holed through at 10:28 P. M. on July 28. Main heading excavation 0.37 miles during July, making a total of 12.14 miles excavated and leaving 0.9 miles to be penetrated between the Lawrence adit and Potrero shaft.

Civil Engineering Division

Design—The work of the Design division during July included the design of structures for the Palos Verdes feeder south of 98th Street, the completion of reinforcement steel drawings for the valve and outlet structures at the distribution system headworks, and a stress analysis of the outlet tower for the Palos Verdes reservoir. Specifications were issued for the purchase of 5,800 barrels of sulphate-resistant cement for use on the Palos Verdes feeder line, and for construction of the terrazzo floors in the five pumping plants.

Distribution Division

Office Engineering—Work was in progress throughout the month on preparation of specifications, plans, and profiles, and the computation of bidding quantities for the Palos Verdes feeder south of 98th Street. Studies were carried on relative to the production costs of water in the member cities.

Field Construction—See progress table page 4. At the distribution system headwords excavation for the upper feeder connection and for the base of the outlet structure was completed.

Electrical Engineering

Main Pumping Plants—See progress table page 4. At Hayfield the building contractor, L. E. Dixon and Case Construction Co., finished all work under the contract and notice of completion was filed. This completed the construction of all pumping plant buildings on the aqueduct. District forces were engaged at all plants in the installation of pumping plant equipment.

Personnel Division

The net turnover for June, 1938, for all positions was 3.63 per cent, as compared with 4.22 per cent for the same month in 1937.

Purchasing Division

A total of 1,093 purchase orders was issued, covering purchases amounting to approximately $85,700. Carload forwardings totaled 96, of which 31 were cement and 37 were general merchandise.

Accounting and Costkeeping

The total cost of the work accomplished to July 31, 1938, was $168,500,650.

Design

Controlling Factors in the Location and Design of the Aqueduct

By JULIAN HINDS
Assistant Chief Engineer, M. W. D.

(*Continued from August* 15.)

The requirements for safety against damage to private property, other than District property, are only slightly less exacting. It is theoretically permissible to risk injury to private property if the cost of reimbursing the private individual for the resultant loss is less than the cost of building in such manner as to avoid the risk of injury. However, claims for damage to private individuals cause dissatisfaction and ill-feeling and any possibility of such damage should be eliminated unless the risk is small and the cost of elimination enormous.

Risk of injury to the aqueduct itself can be treated on a more rational basis. There must, of course, be no risk of wholesale destruction, nor must there be any risk of an interruption in excess of the shut-down provided for in the design of storage works. Within the limits of such provision, risk of damage to the aqueduct itself, where danger to human life is not involved, can be worked out on a mathematical basis. For example, the use of open lined canal instead of covered conduit across favorable portions of the desert, effected a reduction of $20,000,000 in construction and operating costs. Unfortunately, an open canal cannot be made absolutely secure against damage, say by a flood like that which occurred in the coastal area in the spring of 1938. Such a flood, occurring on the desert, would be quite likely to damage the open canal. Complete safety under such extraordinary conditions cannot be attained at any reasonable cost, just as an "absolutely" fireproof house generally is not a good investment. The prudent owner builds his house well, eliminating all needless hazards, and then insures against further risk of loss. Insurance on the aqueduct is provided by building in such a manner that, although occasional difficulties may be encountered, widespread destruction or frequent interruption will not occur. To this end the canal is set deeply into the ground. with only minor exceptions, the concrete lined waterway is entirely within the firm, undisturbed soil. The concrete lining is very substantial, heavily reinforced with steel bars and from 6 to 8 inches thick. No flood could destroy more than a short length of this structure. The worst that could happen, even under extraordinary storm conditions, would be a moderate repair bill and a short interruption in flow. Service during such interruptions may be maintained by pumping from the Hayfield Reservoir, which lies beyond the last open canal section; or by drawing on the Cajalco Reservoir at the end of the main aqueduct.

The canal section is thoroughly protected against all ordinary hazards. Great care is taken to exclude storm waters from the canal. The open waterway is interrupted at every drainage channel, the flow being carried across the floodway in pressure pipes, safely buried below the ground surface. Long diagonal drains reach far out on the uphill side to gather small rivulets and sheet drainage into the prepared crossing. Every foot of the uphill bank is protected by substantial embankments and parallel drains. With good luck, these defenses may never be breached and at worst they will resist all but the worst onslaughts of Mother Nature. These open canals are perhaps the most secure open canals ever constructed, yet they involve no element of elaborate extravagance.

The foregoing discussion of safety in the open canals illustrates the type of thinking that went into the planning of the entire aqueduct. The location and design of diversion work, pumping stations, power lines, covered conduits, tunnels, pipe lines, and reservoirs, all were scrutinized with equal care for elements of danger.

The elements of "safety" and "permanence" are closely related. A dangerous structure is not likely to be a permanent one. The aqueduct is being built for the future as well as for the present, and must stand and give adequate service for an indefinitely long time. Aqueduct bond redemptions are to be extended over a period of fifty years and it is essential that the aqueduct last at least that long. Fortunately, most portions of it, with only nominal expenditures for repairs and replacements, will last much longer than that, in fact, indefinitely. The only important features subject to deterioration are the steel pressure pipes in the distribution system and these are being constructed and protected with such care that a trouble-free life of more than 50 years is confidently expected.

Certain machine parts in the pumping plants may wear out and need replacement. These are covered in all estimates by an allowance for depreciation, or replacement. These features are to be carefully maintained and will be delivered to "posterity" in good order when the bonds have been retired.

"Convenience" is a somewhat less exacting requirement. It is important that the system be planned to permit smooth operation, that deliveries be made at convenient points, that lines be laid out to permit convenient connection to potential future areas, and that in all respects the system be eminently workable. In many respects "convenience" is relative. For example, it would have been convenient to have the terminal of the aqueduct high enough to serve gravity water to all parts of the District area, but in the higher portions of Pasadena, Los Angeles, and other foothill cities, this was impracticable and expensive. Hense, a compromise was required. The outlet ends of the distributing lines from Cajalco were lowered and consequently cheapened, until an economic balance was reached between the cost of feeder lines and the cost of getting water out of these lines and into the distribution systems of various cities. Similar measures of the value of convenience were applied all along the line.

The requirement for economy pervaded every element of the undertaking. The magnitude of the project was such that success required that the benefits sought should be attained at the minimum possible cost. It doesn't follow that the cheapest possible line, nor the cheapest type of construction, was adopted, but every endeavor has been made to meet the requirements of safety, permanence, and convenience, for the least practicable amount of money.

As the project nears completion of its initial stage, this endeavor appears to have been successful.

A "heading crew" excavating the face ahead of a steel pipe being jacked under a railroad crossing on the Palos Verdes feeder of the distributing system. The steel pipe is forced through the ground by hydraulic jacks.

NEWS FROM FIELD AND OFFICE

Friends of Harry Carleton, general manager of the West Construction Co., will be glad to know that he is recovering from a serious illness and is now vacationing in Washington. The West Construction Co. is building Monrovia tunnels Nos. 1, 2 and 3 on the distributing system, and built the Whitewater tunnels on the main aqueduct.

* * *

A note from Antioch, California, from Oliver Folson, states that he is now a Junior Engineer on the Delta Division of the Central Valley project on which work is under way on 46 miles of canals, two short tunnels, and several pump lifts. Folson worked for the District for three years on Division 2 and for a year for the Bureau of Reclamation at Parker Dam. His note also states that Max Durham, who was one of the old-timers at Division 1 and Parker Dam, is also now employed on the Central Valley project at the same location.

* * *

Speaking of "old-timers," the list keeps growing. The NEWS will endeavor to print all that are sent in, even though it isn't possible to do it all at one time. If you're eligible, send in your name.

A card from Frank O. Seright states that he started work on the aqueduct on the preliminary surveys on July 8, 1926. Frank is now in the Operating Division at Banning.

Another "early surveyor" was Robert H. Lindsey, who started work in the vicinity of Amboy in June, 1929. Bob Lindsey, who is now living in Inglewood, recalls that during the course of various surveys, he walked from Desert Center to the Colorado River three different times. Later he was office engineer at Division 3, from 1933 until work was completed in January, 1938.

From the Division 1 pumping plants (Intake and Gene) comes a list of old-timers, all of whom are now working at that headquarters. This list includes: Herb Cutler, who started in 1929; G. E. "Archy" Archibald, 1931; Bud Graham, 1931; G. L. Nelson, 1931; Ed Russell, 1933; J. H. Mudgett, 1933; W. L. Miller, 1933; C. R. Kollenborn, 1933; J. S. Armstrong, 1933; Fred Stehn, 1933; J. C. Sharp, 1933; Gus McGinnis, 1933; R. P. Bushey, 1933; John Hofseth, 1933; Bill Smith, 1933; Fred Crawford, 1933; and W. W. Griffin, 1933.

Aqueduct Temperatures

August 1 to 15, 1938

	Max.	Min.
Div. 1	**119°**	**74°**
Div. 2	**112°**	**70°**
Div. 3	**117°**	**76°**
Div. 5	**110°**	**52°**

Earl Kinnick, formerly in the Los Angeles Mails and Files Section, left the District on August 16 to accept a position with the Southern California Gas and Electric Co. in that firm's Los Angeles office.

* * *

H. A. Mehnert, formerly in the Right-of-Way Division, resigned from the District on August 8 and flew to Port Au Prince, Haiti, to work for the J. G. White Corp. on a government road building project.

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Frank Finch, formerly in the Design Division in charge of Materials, is now Senior Structural Engineer in the Division of Architecture of the State of California.

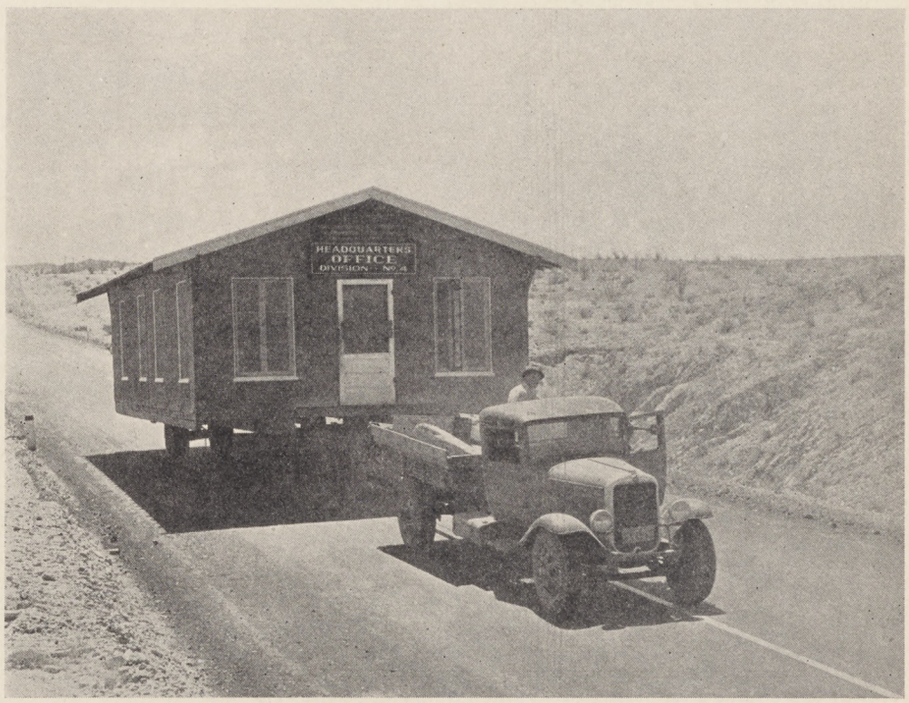
Monty Hawks, who had been in the Design Division since 1933 on statistical and cost work, resigned from the District on August 16 to accept a position with the Standard Oil Co. of California. Monty will be in the Right-of-Way department of the oil company with headquarters in San Francisco.

* * *

Bob Speers, formerly the editor of the NEWS and now with the publicity department of Paramount Pictures, is the proud papa of his third daughter, who arrived on August 3. The young lady's name is Linda, and she checked into this world at 6 lbs., 14 oz., flat.

* * *

Former Division Engineer W. E. Whittier is now in charge of the Right-of-Way Division of the U. S. Army Engineers in connection with flood control work. Mr. Whittier was with the District from 1930 until construction work was completed on Division 1 in July, 1938. After supervising preliminary location and design of the distribution system, he was division engineer of Divisions 1 and 2. His new headquarters is in Los Angeles.



AN OLD-TIMER TAKES ITS LAST RIDE

With its door nailed shut, having slammed for the last time on the construction men who have scattered to the four winds, this lonely building is on its way to become an eating house in the Coachella Valley. During its bustling career it played an active part in the construction of the 33 miles of Coachella tunnels and as Division Headquarters on Div. 4. It began life in 1933 at Pushawalla, was later moved to Berdoo Camp, and finally "up on the hill" in the vicinity of the Mecca Pass tunnels.

"Bronze Fog" Used in Painting Pump Plant Interiors

Out on the desert, two hundred miles from the nearest ocean at a spot where fog is unknown, an aqueducker wears a helmet similar to that worn by a deep sea diver to keep "metal fog" out of his eyes while he paints with fire in decorating the inside of aqueduct pumping plant control rooms.

All this has to do with the metallizing of steel channels in the indirect lighting fixtures in the pump plant control rooms. These steel supports are painted with bronze for protective and decorative purposes. This bronze is applied by a metallizing gun which melts bronze wire and produces a molten fog of vaporized metal which is sprayed into the air at a speed of 300 miles per hour.

Immediately cooling when it strikes any object, this metal "fog" becomes a thin layer of bronze covering the part being painted.

In addition to decorating the control rooms, work will soon be under way on the interior decorations of the main rooms of the pumping plants. Present plans call for the following color scheme in the motor rooms:

Motors, green enamel with black center stripe.

Floors, white, black, and neutral gray terrazzo.

Structural steel and window frames, light emerald green.

The walls of the plants, both interior and exterior, are being left in their natural concrete gray. The buildings are roofed with red tile.

PATHFINDERS

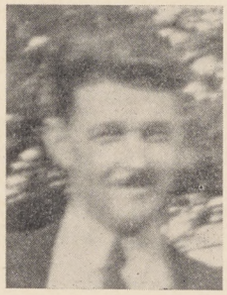
(*Continued from Page* 5.)

From 1899 to 1907 he was Chief of Division of Irrigation and Drainage Investigations, Department of Agriculture. In 1907 he went to Victoria, Australia, and until 1914 was Chairman of State Rivers and Water Supply Commission of that British dominion state.

In 1914 Dr. Mead returned to the United States and from 1914 to 1923 he was professor of rural institutions at the University of California, and chairman of the State Land Settlement Board. During this period he was also consulting engineer on the proposed construction of the All-American Canal.

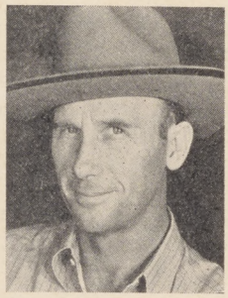
From April, 1924, until the time of his death he was Commissioner of the Reclamation Service. It was during this period that this service constructed Boulder Dam.

Who's Who On the Aqueduct



Douglas K. Fagg

Harry E. Richardson



Harry T. Swango

DOUGLAS K. FAGG
General Clerk, Electrical-Mechanical Division, M. W. D.

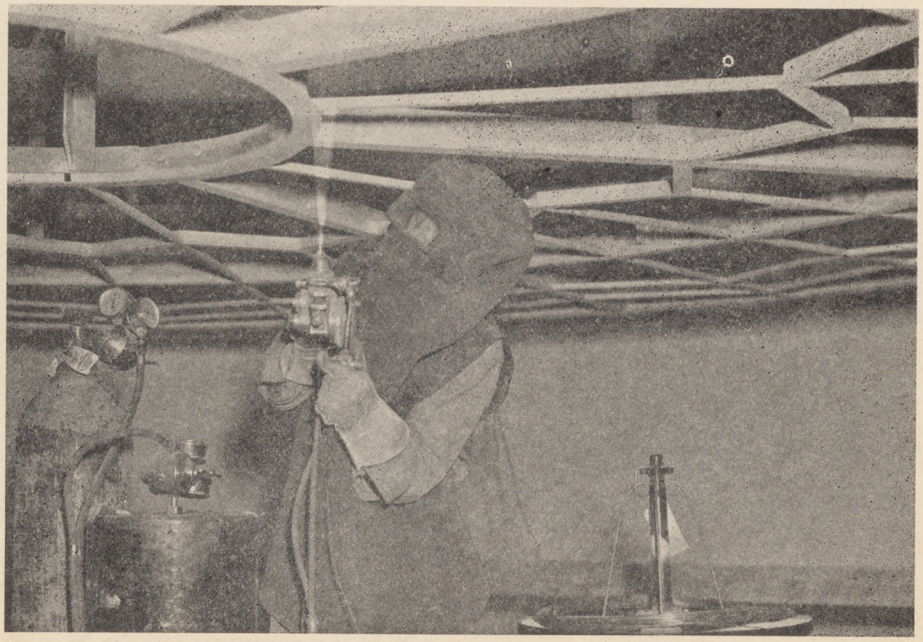
Born in Cambria, Virginia, June 27, 1899 . . . Attended Virginia Polytechnic College and studied engineering . . . Was in U. S. Army, 1917-1918 . . . Was timekeeper and engineering construction clerk on heavy construction work for firm of Coyle-McQuire, Denver, Colorado, for four years . . . 1925-1932, timekeeper and general office work on apartment house construction for Shave Construction Co., Los Angeles . . . With M. W. D. since April, 1933, first at Indio, later Berdoo, L. A. Accounting, and Electrical-Mechanical . . . Is married and has a son . . . Answers to 'Doug".

HARRY E. RICHARDSON
General Clerk, Accounting Division, M. W. D.

Born in Neodesha, Kansas, March 9, 1902 . . . Was with the Chicago, Burlington & Quincy Railroad for five years as timekeeper and assistant chief clerk in Chicago office . . . Was cost accountant and office manager for three years for Regan Forge and Engineering Co., in San Pedro, Calif. . . . Has been with M. W. D. since September, 1933, starting at Berdoo Camp, and later transferred to L. A. Accounting Division . . . Is Secretary-Treasurer of L. A. Employees Board of Control . . . Is married.

HARRY T. SWANGO
Foreman, Telephone System, M. W. D.

Born in Kinney, Illinois, January 7, 1901 . . . Was with Southern California Telephone Company for five years on installation of equipment and public relations work, and for three year period was with Warner Brothers Studios on maintenance and operation of recording equipment in sound department . . . Has been with M. W. D. since September, 1933 . . . Is married and has a son and a daughter.



Aqueduct "fire-painter" using metallizing gun to paint bronze fog on steel channel supports for indirect lighting fixtures in the Iron Mountain pumping plant.